

AMENDMENT

CLAIM OBJECTIONS

Remarks

Applicant respectfully submits that the claims as written are in acceptable form.

Examiner objects to Claims 1, 14, and 26 because the language in the preamble should be incorporated in the claim language. Specifically, the Examiner stated:

“Claims 1, 14, and 26 are objected to because of the following informalities: the preamble recites “a golf putter comprising:” should be incorporated in the claim language in claims 1, 14, and 26 rather than in a form of an introduction to the claim language. Appropriate correction is required.”

The preamble is a short introductory statement that precedes the body of every claim. The preamble of an independent claim can summarize the type of invention. The preamble can, but does not have to, identify the statutory class of the invention (i.e., process, machine, article of manufacture, or composition of matter). For example, the preamble can be “a machine for making felt”, (or as in the present case, “a golf putter”). The preamble usually includes the intended function of the invention. The function can be stated directly or indirectly through the choice of a noun having a recognized functional content (for example, “A hand hammer,”) (or, as in the present case, “A golf putter”). (Sheldon, Jeffrey. How to Write a Patent Application Practicing Law Institute, New York City, (Dec 1999) page 6-15)

Claims that recite a combination of elements require a transitional phrase between the preamble and the body of the claim. Nearly all claims have a transition between the preamble and the body of the claim. These transitional phrases denote varying degrees of breadth of the scope of the claim. (*Ex Parte Davis*, 80 U.S.P.Q. 445 as cited in Sheldon, Jeffrey. How to Write a Patent Application Practicing Law Institute, New York City, (Dec 1999) page 6-20)

The transitional phrases "*comprising*," "*which comprises*," "*including*," and "*having*" are construed to mean that the claim includes additional elements that are not specifically recited in the claim. (Moleculon Research Corp v. CBS, Inc. 793 F.2d 1261, 229 U.S.P.Q. 805 (Fed Cir 1986) as cited in Sheldon, Jeffrey. How to Write a Patent Application Practicing Law Institute, New York City, (Dec 1999) page 6-21). These transitional words are used whenever prior art permits because they create an "open" (as opposed to a "closed") claim. It is best to use only "comprising" or its grammatical equivalent because its meaning is well settled. Sheldon, Jeffrey. How to Write a Patent Application Practicing Law Institute, New York City, (Dec 1999) page 6-21)

Therefore, the Applicant respectfully requests the Examiner to withdraw his objection to the use of "A golf putter comprising" as the preamble and transitional phrase preceding Claims 1, 14 and the use of "A golf putter head comprising" as the preamble and transitional phrase preceding Claim 26.

CLAIM REJECTIONS

Examiner rejected claims 1 through 30 35 U.S.C. § 102. Specifically, the Examiner stated:

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that for the basis for the rejections under this section made in this office Action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in a public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Caldwell (3,578,332). Caldwell discloses the golf club of the claimed invention (Figures 1-5 and Col. 1 lines 36-53).

Claims 1 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Bernhardt (4,265,451). Bernhardt discloses the golf club of the claimed invention (Figure 6).

Claims 1 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Giordano (6,179,797). Giordano discloses the golf club of the claimed invention (Figures 1-3).

Claims 1 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Stevenson, Jr. (5,333,870). Stevenson, Jr. discloses the golf club of the claimed invention (Figures 1 and 11 and Col.9, lines 54-68).

With respect to the claim rejections based on Caldwell (3,578,332)

Applicant respectfully submits that Caldwell does not disclose the golf club of the present invention. The golf club disclosed by Caldwell is significantly different. Caldwell claims "a golf putter having an elongated head with toe and heel portions, a planar striking surface,..." (Claim 1, Col. 2, Lines 36-37) whereas, the putter of the present invention has an elliptical striking surface. Moreover, Caldwell discloses "...the juncture 15 (FIG. 4) of the sole 16 with said striking face 10 radiused slightly so as to obviate the formation of a sharp cutting edge." (Col. 2, Lines 3-5). In the present invention, the juncture of the sole and the elliptical striking face has a sharp edge. "The sharp edged rearward angle extending rearwardly from the sole forms a doze to brush back the taller grass, increasing the odds of making putts launched from less manicured greens or from the fringe areas surrounding the green." (Specification, Page 11). Finally, Caldwell's putter has a sole which is "... curved form heel 11 to the toe 12.", while the sole of the present invention is a straight line from the heel to the toe. "The preferred embodiment of the present invention ...(limits)... the width of the sole across the transverse portion of the putter head." (Specification, Page 11)

) not claimed

With respect to the claim rejections based on Bernhardt (4,265,451)

Applicant respectfully submits that Bernhardt does not disclose the golf club of the present invention. The golf club disclosed by Bernhardt is significantly different. Bernhardt discloses a putter with "... a sole portion 30 having a compound curvature and extending between rear surface 28 and ball striking surface 29... (Col. 5, Lines 6-8), whereas the present invention has a narrow, flat sole portion. "The head forms a narrow sole to decrease drag allowing a smoother juncture between the earth, the grass and the putter." (Specification, Page 11). The Bernhardt putter sole portion "...upwardly and outwardly diverges from centerline 34 toward inner end 32 and outer end 33.. The second curvature of sole portion 30 is the upward and rearward curvature between the lower edge of ball-striking surface 29 and the lower edge of rear surface 28." (Col. 5, Lines 19-24). As noted above, the sole portion of the present invention is flat from toe to heel.

not claimed

The ball-striking surface of the Bernhardt putter is "...substantially flat...." (Col. 5, Line 28) whereas the ball striking surface of the present invention is elliptical. "A non-radial striking face is created by using the equivalent of a finite element grid specified to reshape the striking surface at 1/10-inch increments and recalculate the surface contour to allow its user a 1-degree ball strike when the ball is impacted at any point on the putter head striking surface." (Specification, Page 9).

The shaft of the Bernhardt putter is significantly different from that of the present invention in that it "...includes a wedge-shaped portion 40 which extends forward of ball-striking surface 29..." (Col. 6, Lines 19-20). "The present invention includes a shaft that extends rigidly from the putter head at an angle

greater than 10 degrees from the vertical.” (Specification, Page 2) The shaft of the present invention is a conventional tubular member.

With respect to the claim rejections based on Giordano (6,179,797)

Applicant respectfully submits that Giordano does not disclose the golf club of the present invention. The golf club disclosed by Giordano is significantly different. Giordano discloses a putter with a front surface “...provided for striking a golf ball and compris(ing) a convex surface defined by upper radius 34 and lower radius 36. In this preferred embodiment upper radius 34 is smaller than lower radius 36...” (Col. 2, Lines 63 – 67). The striking surface of the present invention is characterized by a striking face with a non-radial curvature. (Claim 2, Line 3) Furthermore, the Giordano putter is a dual radius putter having a convex shape on the striking surface of the putter and the non-striking surface of the putter.

The Giordano putter has a “...bottom surface 42...defined by bottom radius 46 and has a substantially convex shape. (Col. 3, Lines 33-34). The putter of the present invention has a flat narrow sole (Claim 5, Line 1)

With respect to the claim rejections based on Stevenson, Jr. (5,333,870)

Applicant respectfully submits that Stevenson, Jr. does not disclose the golf club of the present invention. The golf club disclosed by Stevenson, Jr. is significantly different. Stevenson, Jr. discloses a rounded sole with a possible embodiment of a “...Wider sole... securely fastened to backside 12...” (Col. 8, Lines 27-28). The sole of the present invention is narrow and flat. (Claim 5, Line 1) The rear portion of the Stevenson, Jr. putter is curved while the doze of the present invention is flat. . “The sharp edged rearward angle extending rearwardly from the sole forms a doze to brush back the taller grass, increasing the odds of making putts launched from less manicured greens or from the fringe areas surrounding the green.” (Specification, Page 11). The striking surface of the Stevenson, Jr. putter is oriented in a “...substantially vertical plane...” Col. 11, Line 58) and “...flat and slanted rearwardly...” (Col. 11, Lines 64-65). The striking surface of the present invention is elliptically curved. “The new striking surface of the present invention begins with a 1-degree non-radial contour in the optimum-striking center in the middle of the striking surface. A non-radial striking face is created by using the equivalent of a finite element grid specified to reshape the striking surface at 1/10-inch increments and recalculate the surface contour to allow its user a 1-degree ball strike when the ball is impacted at any point on the putter head striking surface.” (Specification, Page 9)

Applicant respectfully submits that the putters of Caldwell, Bernhardt, Giordano and Stevenson, Jr. bear no resemblance to the putter of the present invention and requests that the Examiner withdraw his rejection of claims 1 and 14 based on 35 USC Section 102.

Examiner rejected claims 1 through 30 35 U.S.C. § 103. Specifically, the Examiner stated:

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time of the invention was made to a person having ordinary skill in the art in which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caldwell 332' in view of Stevenson, Jr. 870' and Giordano 727" and Anderson 438".

With respect to claims 2, 5-8, 10-11, 13-15, 18-20, 22-24, 26, 28, and 30, Caldwell 332" disclose(sic) the claimed invention except alignment means, a bottom face having a doze portion, front face having a non-radial curvature, a cut-out to concentrate mass at the shaft and head portion.

Stevenson 870" teaches an alignment means to aid in aligning the putter to the ball and the backside 12 is slanted backward (Fig.11) to concentrate more mass at the top surface 3 of the head.

Giordano 727" teaches a convex striking face prevents(sic) the ball from skidding and allows the ball to have a forward rolling. (Summary of Invention).

Anderson teaches a cut out portion or recess 20 where more mass can be concentrated in the heel and toe portion to improve moment of inertia (Col.2, lines 65-68 and Col. 3, lines 1-5).

Thus, it would have been obvious and desirable in view of Stevenson, Jr. Giordano, and Anderson 438" to modify the golf putter of Caldwell to include alignment means of Stevenson, Jr. a front face curvature of Giordano, and a cut out or recess of Anderson to benefit the above advantages (sic).

With respect (sic) claims 2 and 25, Official Notice is taken that it is conventional to fabricate the golf club with different material and it would have been obvious to do so here to facilitate assembly, improve structural strength and control the weight of the club head.

With respect to claims 3, 12 and 16, the structure of Caldwell appears to show the center of gravity is midway between the toe and heel portion.

With respect to claims 4, 17, and 27, Anderson shows several markers 30-34 lies in a semi-circle 35 having a diameter size of a golf ball. Such semi-circle marker aids the user in aligning the putter to the ball for accurate putting.

Thus it would have been obvious in view of Anderson to incorporate such marker to prior art to facilitate alignment.

With respect to claims 9, 21, and 29, Official Notice is taken that it is conventional to provide(sic) such non-radial surface to control backspin of the ball upon impact and it would have been obvious and desirable to incorporate such surface feature to prior art above to control the backspin of the ball.

The Applicant has withdrawn Claims 3, 12, 16 and 25. With respect to claims 2, 4, 5, 6, 7, 8, 10, 11, 13, 14, 15, 18, 19, 20, 22, 23, 24, 26, and 28 the Applicant respectfully disagrees with Examiner's conclusions.

With Respect to Claims 2, 4:

The alignment means of Stevenson, Jr. does not hint, suggest, or point to the alignment means of the present invention. The alignment means taught by Stevenson, Jr. consists merely of a single straight line, or "alignment mark" (Col. 7, Line 35). The present invention claims "an alignment means extending in a radial arc from (the) front face..." (Claim 4 Lines 1-2). The single straight line of Stevenson, Jr. requires the golfer to estimate the center line of the golf ball and line up the alignment line with the ball in the split-second taken to connect the putter with the ball during the golf swing. The alignment means of the present invention allows the golfer to match the curvature of the outer diameter of the golf ball with the curvature of the arc, avoiding the difficulty of accurately guessing the precise midpoint of the center of the ball.

With Respect to Claim 5:

The sole of Caldwell does not hint, suggest, or point to the sole of the present invention. The sole taught by Caldwell describes the sole of his invention as follows: "...the juncture 15 (FIG. 4) of the sole 16 with said striking Face 10 is radiused slightly so as to obviate the formation of a sharp cutting edge." (Col 2, Lines 3-5) Further, the sole of Caldwell is "...curved from heel 11 to the toe 12." (Col 2, Lines 5-6)

The sole of the present invention is narrow (Claim 5) and forms a sharp edge at the juncture of the sole and the sole for the following reason: "Putters common in the art are designed to have a wide sole. This provides a surface upon which the putter may rest and slide upon the ground, giving the golfer a means of aligning the putter so that the putter head sweet spot meets with the ball at the equator of the ball. The implicit assumption is that the ground or green along which the putter glides is smooth, having no friction. In reality, putters are also used along the fringes of the putting green where the grass is not well manicured or smooth. Further, the putting green itself may be wet or un-manicured. The resultant friction between the putter sole and the surface of the ground creates a drag that interferes with the smooth execution of the putt and results in loss of control during the putt.

The preferred embodiment of the present invention solves this problem by limiting the width of the sole across the transverse portion of the putter head. The head forms a narrow sole to decrease drag allowing a smoother juncture between the earth, the grass and the putter. In addition, the sharp edged rearward angle extending

rearwardly from the sole forms a doze to brush back the taller grass, increasing the odds of making putts launched from less manicured greens or from the fringe areas surrounding the green. (Specification, Pages 9 and 10)

With Respect to Claims 6, 7, 15, 18, and 19:

The curved backside of Stevenson, Jr. does not hint, suggest, or point to the slanted doze of the present invention. The “right triangular shape” (Col 7, Line 14) of Stevenson, Jr. “.. creates a perfect shape for distributing increasingly heavier weight simultaneously in two directions at right angles to eachother, i.e. increasingly heavier weight forwardly toward face 5 and increasingly heavier weight upwardly toward top surface 3 of head 2...” (Col 7, Lines 15-20). Stevenson, Jr. goes on to state that “The unique distribution of weight as described also results in an unusual amount of weight being distributed all across the top area of head 2...” (Col 7, Lines 25-27)

The rearwardly and upwardly extending doze (Claim 6, Lines 1-2) of the present invention concentrates mass at the upper portion of the putter head, not across the top area of the head, as in the Stevenson, Jr. putter. Further, the rearwardly and upwardly extending doze allows a smoother putt while improving the chances of the golfer making a putt from the fringe area of the putting green by preventing drag on the putter from taller grasses on the fringe areas surrounding the putting green. The curved backside of Stevenson, Jr. does not hint, suggest, or point to the utilitarian purpose of the thin sole plate and doze of the present invention that provides “a smoother juncture between the earth, the grass and the putter.” (Specification, Page 11)

With Respect to Claims 2, 8, 9 , 10, 15, 17, 28, 29 and 30:

The convex striking face of Giordano. does not hint, suggest, or point to the convex striking face of the present invention. Giordano teaches a convex striking face defined by an “... upper portion of the striking surface of the club face (with).. a smaller radius of curvature than the lower portion of the striking club face..” (Col. 1, Lines 48-50). The striking surface of the present invention is a non-radial, elliptical surface. (Claim 8, Lines 1-2)

With Respect to Claims 2 and 11:

The cut out portion or recess of Anderson. does not hint, suggest, or point to the cut out portion or recess of the present invention. Anderson teaches increasing the weight of the cut-out portions of the putter. “...two weights 36 and 37 in the two recesses 18 and 19...” (Col. 2, Lines 64-65). The present invention removes material from the putter. The weights in the Anderson putter “..provide a high moment of inertia against inadvertent twisting of the shaft...” (Col. 3, Lines 1-2). The cut out portions of the present invention serve to concentrate the weight behind the “sweet spot” of the putter rather than increase the moment of inertia of the toe and heel portions of the putter. However, Applicant has amended Claims 2 and 11 to eliminate the phrase “cut out” and has replaced it with the word “sculpted”.

With Respect to Claim 13:

Applicant respectfully submits that the argument set forth with regard to Claims 2, 8, 9, 10, 15, 17, 28, 29 and 30 applicable to Claim 13.

With Respect to CLAIMS 2 and 25:

Applicant has removed the phrase "...being made of a metallic or non-metallic material." From the claim language of Claim 2 and deleted Claim 25.

With Respect to CLAIMS 3, 12 and 16:

Applicant has deleted Claims 3, 12 and 16.

With Respect to CLAIMS 4, 17 and 27:

The markers of Anderson. does not hint, suggest, or point to the markers of the present invention. The markers of Anderson lie in a semi-circle 35 having a diameter size of a golf ball placed on a lower shelf of the putter behind the striking surface. The arc marker of the present invention is a part of a three tiered alignment system consisting of the curvatures of the ball, the curvature of the marker, the curvature of the rear. The handle is centered in the arc to provide for ease of establishing an even line of sight from the ball to the face of the putter.

With Respect to CLAIMS 9, 21 and 29:

Examiner indicates that "with respect to claims 9, 21, and 29, Official Notice is taken that it is conventional to provides (sic) such non-radial surface to control backspin of the ball upon impact and it would have been obvious and desirable to incorporate such surface feature to prior art above to control the backspin of the ball."

Applicant respectfully submits that none of the cited inventions incorporate a non-radial striking surface. Applicant respectfully submits that it is known in the art to provide a radial surface to control backspin of the ball upon impact. The present invention solves the problem of backspin by "...imparting a one degree loft and a controllable overspin to the ball by providing a novel striking surface which impacts the ball at a one degree angle off the perpendicular throughout an expanded strike zone or "sweet spot". The striking surface of the preferred embodiment is defined by a closed plane curvature generated by a point moving in such a way that the sums of its distances from two fixed points is a constant. The new striking surface of the present invention begins with a 1-degree non-radial contour in the optimum-striking center in the middle of the striking surface. A non-radial striking face is created by using the equivalent of a finite element grid specified to reshape the striking surface at 1/10-inch increments and recalculate the surface contour to allow its user a 1-degree ball strike when the ball is impacted at any point on the putter head striking surface. This provides a tangible "forgiveness" for those less skilled in the art of putting. Thus, if the golfer strikes the ball with the shaft angled forward or angled back from the striking point, or with the putter head at a varying distance from the ground, the ball will attain the desired overspin and loft. The present invention compensates for unfavorable strokes, correcting for under and over striking through the use of a

novel surface curvature identical to the angle of lift at differing heights of the putter from the surface of the ground when the putter hits the ball. No other cited art incorporates this feature.” (Specification, Pages 8-9)

Conclusion

Applicant has amended claims 2, 11 and 23 to more closely describe the invention. Applicant has deleted claims 3, 12, 16 and 25 in response to the Examiner’s objections. As such, Applicant respectfully traverses the Examiner’s rejections.

Claims 1, 2, 4-11, 13 – 15, 17 – 24 and 26 – 30 disclose a novel, non-obvious invention. Applicant respectfully submits that the cited art neither teaches, discloses, hints or suggests in any manner whatsoever the golf club as defined in the cited art.

In particular, the present invention discloses and claims a putter with an elliptical striking surface, unlike the planar striking surface of the Caldwell ‘332 putter, unlike the substantially flat ball-striking surface of the Bernhardt putter, and unlike the radii of the Giordano ‘797 putter. The putter of the present invention has a narrow, flat sole portion with a sharp edge at the juncture of the doze and the sole, unlike the radiused juncture of Caldwell, the curved sole portion of Bernhardt ‘451, the wide sole of Giordano ‘797 or the rounded sole of Stevenson, Jr. ‘870. The shaft of the present invention is a conventional tubular member, unlike Bernhardt ‘451 putter with a wedge shaped portion.

The Applicant submits that the prior art made of record by the Examiner in this Office Action should not be considered pertinent to the present invention for the reasons cited above.

As such, Applicant respectfully requests the Examiner to withdraw the rejection.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment (the relevant attached pages are captioned “Version with markings to show changes made”).

In light of the above, Applicant respectfully submits that all the remaining claims are allowable, and Applicant respectfully requests that the Examiner reconsider the case and pass the case to issue. Should the Examiner have any questions or wish to discuss any aspect of the application, a telephone call to the undersigned would be welcome.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

CLAIMS

What is claimed is:

A golf putter comprising:

1. 1. A shaft with a top end and a bottom end, said top end enclosed by a grip
2. and said bottom end fixedly attached to a head at an angle ten degrees or greater
3. from a direction perpendicular to said head and a longitudinal axis extending
4. from said top end to said bottom end;

1. 2. (Amended) A head having mass, a center of gravity, a top face having an alignment
2. means, a bottom face having a narrow sole and rearwardly and upwardly
3. extending doze portion, a front striking face having a non radial curvature and a
4. sweet spot, a rear section sculpted [having a cut out] for concentrating said mass at a point of
5. attachment of a shaft, a heel section and a distal toe section [being made of a
6. metallic or non-metallic material].

- 1 3. (Deleted) The head of Claim 2 wherein said center of gravity is midway between
- 2 said heel and distal toe sections at a point along a longitudinal axis of a shaft.

- 1 4. The head of Claim 2 wherein said top face has an alignment means
- 2 extending in a radial arc from said front face wherein a fulcrum of said arc is
- 3 centered at said center of gravity of said head and defines said sweet spot.

- 1 5. The head of Claim 2 wherein said bottom face has a narrow sole.

- 1 6. The head of Claim 2 wherein said bottom face has a rearwardly and
- 2 upwardly extending doze.

- 1 7. The doze of Claim 6 wherein said doze extends upwardly and rearwardly
- 2 at an angle of greater than 10 degrees from a horizontal plane.

- 1 8. The head of Claim 2 wherein said front striking face has a surface forming
- 2 a non- radial curvature vertically extending across said front striking face and a
- 3 non-radial curvature horizontally extending across said front striking face

4 whereby when a golf ball having a surface is struck by said front striking face
5 surface, a one degree loft is imparted to said golf ball over a larger impact zone
6 regardless of where on said front striking surface said front striking surface
7 intersects said golf ball surface at a moment of impact.

1. 9. The front striking face surface of Claim 8 wherein said vertically and
2. horizontally extending non-radial curvatures are defined by an arc derived from a
3. smoothing of a series of individual non-radial surfaces across said front striking
4. face.

1 10. The individual non-radial surfaces of Claim 9 whereby each non-radial
2 surface is defined by an non-radial curvature individually formulated to provide a
3 surface which when in contact with said golf ball surface imparts a one degree loft
4 to said golf ball regardless of where on said front striking face surface said front striking face surface
5 intersects said golf ball surface at a moment of impact.

1. (Amended) The rear section of Claim 2 wherein said sculpted rear section [cut out] removes mass from said
2. head whereby said center of gravity is concentrated at an entry point of said shaft
3. along said longitudinal axis of said shaft rearward of said front face, enabling a pendulum swing by a
4. golfer.

1 12. (Deleted) The entry point of Claim 11 wherein said entry point is located at a point
2 midway between said heel and said toe portions of said putter head.

1. 13. The individual non-radial surfaces of Claim 9 whereby each non-radial
2. surface is defined by an non-radial curvature individually formulated to provide a
3. surface which when in contact with said golf ball surface imparts a one degree loft
4. to said golf ball regardless of where on said front striking face surface said front
5. striking face surface intersects said golf ball surface at a moment of impact.

A golf putter comprising:

1. 14. A shaft with a top end and a bottom end, said bottom end fixedly attached 2 to a head and a
longitudinal axis extending from said top end to said bottom end;

2. 15. A head having mass, a center of gravity, a top face having an alignment
3. means, a bottom face having a narrow sole and rearwardly and upwardly
4. extending doze portion, a front striking face having a non-radial curvature and a
5. sweet spot, a rear section and a distal toe section.

1 16. (Deleted) The head of Claim 15 wherein said center of gravity may be at any point
2 between said heel and distal toe sections along a longitudinal axis of said shaft.

1 17. The head of Claim 15 wherein said top face has an alignment means
2 extending in a non-radial arc from said front face wherein a fulcrum of said non-
3 radial arc is centered at said center of gravity of said head and defines said sweet
4 spot.

1 18. The head of Claim 15 wherein said bottom face has a rearwardly and
2 upwardly extending doze.

1 19. The doze of Claim 18 wherein said doze extends upwardly and rearwardly
2 at an angle of greater than 10 degrees from a horizontal plane.

1 20. The head of Claim 15 wherein said front striking face has a surface
2 forming a non- radial curvature vertically extending across said front striking face
3 and a one degree loft is imparted to said golf ball regardless of where on said
4 golf ball surface said front striking surface intersects said golf ball surface
5 at a moment of impact.

1 21. The front striking face surface of Claim 20 wherein said vertically and
2 horizontally extending radial curvatures are defined by an arc derived from a
3 smoothing of a series of individual non-radial surfaces across said front striking
4 face.

1 22. The individual non-radial surfaces of Claim 21 whereby each non-radial
2 surface is defined by an non-radial contour individually formulated to provide a
3 surface which when in contact with said golf ball surface imparts a one degree loft
4 to said golf ball regardless of where on said front striking face surface said front striking surface intersects

5 said golf ball surface at a moment of impact.

1 23. (Amended) The rear section of Claim 15 wherein said sculpted portion [cut out] removes mass
2 from said head whereby said center of gravity is concentrated at an entry point of said shaft
3 along said longitudinal axis of said shaft rearward of said front face, enabling a
4 pendulum swing by a golfer.

1 24. The entry point of Claim 23 wherein said entry point is located at a point
2 between said heel and said toe portions of said putter head.

1 (Deleted) The putter head of Claim 15 being composed of metallic or non-metallic
2 materials.

A golf putter head comprising:

1 26. A head having a top face with an alignment means, a bottom face, a front
2 striking face having a non-radial curvature, a sweet spot and a rear section.

1 27. The head of Claim 26 wherein said top face has an alignment means
2 extending in a non-radial arc from said front face wherein a fulcrum of said non-
3 radial arc defines said sweet spot.

1 28. The head of Claim 26 wherein said front striking face has a surface
2 forming a non-radial curvature vertically extending across said front striking face
3 and a one degree loft is imparted to said golf ball regardless of where on said
4 front striking face surface said front striking surface intersects said golf ball surface at a moment of impact.

1 29. The front striking face surface of Claim 28 wherein said vertically and
2 horizontally extending non-radial curvatures are defined by an arc derived from a
3 smoothing of a series of individual non-radial contours across said front striking
4 face.

1 30. The individual non-radial surfaces of Claim 29 whereby each non-radial
2 surface is defined by a non-radial curve individually formulated to provide a

- 3 surface which when in contact with said golf ball surface imparts a one degree loft
- 4 to said golf ball regardless of where on said front striking face surface said front
- 5 striking face surface intersects said golf ball surface at a moment of impact.